

HAWAII ADMINISTRATIVE RULES

TITLE 12

DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS

SUBTITLE 8

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH

PART 3

CONSTRUCTION STANDARDS

CHAPTER 131.1

DEMOLITION

§12-131.1-1 Incorporation of federal standard

§12-131.1-2 Definitions

Historical note: Chapter 12-131.1 is based substantially upon chapter 12-131. [Eff 7/12/82; am 9/27/84; R 9/21/96]

**§12-131.1-1 Incorporation of federal standard.** Title 29, Code of Federal Regulations, Subpart T, entitled "Demolition", published by the Office of the Federal Register, National Archives and Records Administration, on December 30, 1971, is made a part of this chapter, except as provided in section 12-131.1-2. [Eff 9/21/96] (Auth: HRS §396-4) (Imp: HRS §396-4)

**§1926.850 Preparatory operations.**

- (a) Prior to permitting employees to start demolition operations, an engineering survey shall be made, by a competent person, of the structure to determine the condition of the framing, floors, and walls, and possibility of unplanned collapse of any portion of the structure. Any adjacent structure where employees may be exposed shall also be similarly checked. The employer shall have in writing evidence that such a survey has been performed.
- (b) When employees are required to work within a structure to be demolished which has been damaged by fire, flood, explosion, or other cause, the walls or floor shall be shored or braced.
- (c) All electric, gas, water, steam, sewer, and other service lines shall be shut off, capped, or otherwise controlled, outside the building line before demolition work is started. In each case, any utility company that is involved shall be notified in advance.
- (d) If it is necessary to maintain any power, water or other utilities during demolition, such lines shall be temporarily relocated, as necessary, and protected.
- (e) It shall also be determined if any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances have been used in any pipes, tanks, or other equipment on the property. When the presence of any such substances is apparent or suspected, testing and purging shall be performed and the hazard eliminated before demolition is started.
- (f) Where a hazard exists from fragmentation of glass, such hazards shall be removed.
- (g) Where a hazard exists to employees falling through wall openings, the opening shall be protected to a height of approximately 42 inches.
- (h) When debris is dropped through holes in the floor without the use of chutes, the area onto which the material is dropped shall be completely enclosed with barricades not less than 42 inches high and not less than 6 feet back from the projected edge of the opening above. Signs, warning of the hazard of falling materials, shall be posted at each level. Removal shall not be permitted in this lower area until debris handling ceases above.
- (i) All floor openings, not used as material drops, shall be covered over with material substantial enough to support the weight of any load that may be imposed. Such material shall be properly secured to prevent its accidental movement.
- (j) Except for the cutting of holes in floors for chutes, holes through which to drop materials, preparation of storage space, and similar necessary preparatory work, the demolition of exterior walls and floor construction shall begin at the top of the structure and proceed downward. Each story of exterior wall and floor construction shall be removed and dropped into the storage space before commencing the removal of exterior walls and floors in the story next below.
- (k) Employee entrances to multi-story structures being demolished shall be completely protected by sidewalk sheds or canopies, or both, providing protection from the face of the building for a minimum of 8 feet. All such canopies shall be at least 2 feet wider than the building entrances or openings (1 foot wider on each side thereof), and shall be capable of sustaining a load of 150 pounds per square foot.

**§1926.851 Stairs, passageways, and ladders.**

- (a)** Only those stairways, passageways, and ladders, designated as means of access to the structure of a building, shall be used. Other access ways shall be entirely closed at all times.
- (b)** All stairs, passageways, ladders and incidental equipment thereto, which are covered by this section, shall be periodically inspected and maintained in a clean safe condition.
- (c)** In a multistory building, when a stairwell is being used, it shall be properly illuminated by either natural or artificial means, and completely and substantially covered over at a point not less than two floors below the floor on which work is being performed, and access to the floor where the work is in progress shall be through a properly lighted, protected, and separate passageway.

**§1926.852 Chutes.**

- (a)** No material shall be dropped to any point lying outside the exterior walls of the structure unless the area is effectively protected.
- (b)** All materials chutes, or sections thereof, at an angle of more than 45° from the horizontal, shall be entirely enclosed, except for openings equipped with closures at or about floor level for the insertion of materials. The openings shall not exceed 48 inches in height measured along the wall of the chute. At all stories below the top floor, such openings shall be kept closed when not in use.
- (c)** A substantial gate shall be installed in each chute at or near the discharge end. A competent employee shall be assigned to control the operation of the gate, and the backing and loading of trucks.
- (d)** When operations are not in progress, the area surrounding the discharge end of a chute shall be securely closed off.
- (e)** Any chute opening, into which workmen dump debris, shall be protected by a substantial guardrail approximately 42 inches above the floor or other surface on which the men stand to dump the material. Any space between the chute and the edge of openings in the floors through which it passes shall be solidly covered over.
- (f)** Where the material is dumped from mechanical equipment or wheelbarrows, a securely attached toeboard or bumper, not less than 4 inches thick and 6 inches high, shall be provided at each chute opening.
- (g)** Chutes shall be designed and constructed of such strength as to eliminate failure due to impact of materials or debris loaded therein.

**§1926.853 Removal of materials through floor openings.**

Any openings cut in a floor for the disposal of materials shall be no larger in size than 25 percent of the aggregate of the total floor area, unless the lateral supports of the removed flooring remain in place. Floors weakened or otherwise made unsafe by demolition operations shall be shored to carry safely the intended imposed load from demolition operations.

**§1926.854 Removal of walls, masonry sections, and chimneys.**

- (a) Masonry walls, or other sections of masonry, shall not be permitted to fall upon the floors of the building in such masses as to exceed the safe carrying capacities of the floors.
- (b) No wall section, which is more than one story in height, shall be permitted to stand-alone without lateral bracing, unless such wall was originally designed and constructed to stand without such lateral support, and is in a condition safe enough to be self-supporting. All walls shall be left in a stable condition at the end of each shift.
- (c) Employees shall not be permitted to work on the top of a wall when weather conditions constitute a hazard.
- (d) Structural or load-supporting members on any floor shall not be cut or removed until all stories above such a floor have been demolished and removed. This provision shall not prohibit the cutting of floor beams for the disposal of materials or for the installation of equipment, provided that the requirements of §§1926.853 and 1926.855 are met.
- (e) Floor openings within 10 feet of any wall being demolished shall be planked solid, except when employees are kept out of the area below.
- (f) In buildings of "skeleton-steel" construction, the steel framing may be left in place during the demolition of masonry. Where this is done, all steel beams, girders, and similar structural supports shall be cleared of all loose material as the masonry demolition progresses downward.
- (g) Walkways or ladders shall be provided to enable employees to safely reach or leave any scaffold or wall.
- (h) Walls, which serve as retaining walls to support earth or adjoining structures, shall not be demolished until such earth has been properly braced or adjoining structures have been properly underpinned.
- (i) Walls, which are to serve as retaining walls against which debris will be piled, shall not be so used unless capable of safely supporting the imposed load.

**§1926.855 Manual removal of floors.**

- (a) Openings cut in a floor shall extend the full span of the arch between supports.
- (b) Before demolishing any floor arch, debris and other material shall be removed from such arch and other adjacent floor area. Planks not less than 2 inches by 10 inches in cross section, full size undressed, shall be provided for, and shall be used by employees to stand on while breaking down floor arches between beams. Such planks shall be so located as to provide a safe support for the workmen should the arch between the beams collapse. The open space between planks shall not exceed 16 inches.
- (c) Safe walkways, not less than 18 inches wide, formed of planks not less than 2 inches thick if wood, or of equivalent strength if metal, shall be provided and used by workmen when necessary to enable them to reach any point without walking upon exposed beams.
- (d) Stringers of ample strength shall be installed to support the flooring planks, and the ends of such stringers shall be supported by floor beams or girders, and not by floor arches alone.
- (e) Planks shall be laid together over solid bearings with the ends overlapping at least 1 foot.
- (f) When floor arches are being removed, employees shall not be allowed in the area directly underneath, and such an area shall be barricaded to prevent access to it.
- (g) Demolition of floor arches shall not be started until they, and the surrounding floor area for a distance of 20 feet, have been cleared of debris and any other unnecessary materials.

**§1926.856 Removal of walls, floors, and material with equipment.**

- (a)** Mechanical equipment shall not be used on floors or working surfaces unless such floors or surfaces are of sufficient strength to support the imposed load.
- (b)** Floor openings shall have curbs or stop-logs to prevent equipment from running over the edge.
- (c)** Mechanical equipment used shall meet the requirements specified in Subparts N and O of this part.



**§1926.857 Storage.**

- (a)** The storage of waste material and debris on any floor shall not exceed the allowable floor loads.
- (b)** In buildings having wooden floor construction, the flooring boards may be removed from not more than one floor above grade to provide storage space for debris, provided falling material is not permitted to endanger the stability of the structure.
- (c)** When wood floor beams serve to brace interior walls or freestanding exterior walls, such beams shall be left in place until other equivalent support can be installed to replace them.
- (d)** Floor arches, to an elevation of not more than 25 feet above grade, may be removed to provide storage area for debris: Provided, That such removal does not endanger the stability of the structure.
- (e)** Storage space into which material is dumped shall be blocked off, except for openings necessary for the removal of material. Such openings shall be kept closed at all times when material is not being removed.

**§1926.858 Removal of steel construction.**

- (a)** When floor arches have been removed, planking in accordance with §1926.855(b) shall be provided for the workers engaged in razing the steel framing.
- (b)** Cranes, derricks, and other hoisting equipment used shall meet the requirements specified in Subpart N of this part.
- (c)** Steel construction shall be dismantled column length by column length, and tier by tier (columns may be in two-story lengths).
- (d)** Any structural member being dismembered shall not be overstressed.

**§1926.859 Mechanical demolition.**

- (a) No workers shall be permitted in any area, which can be adversely affected by demolition operations, when balling or clamming is being performed. Only those workers necessary for the performance of the operations shall be permitted in this area at any other time.
- (b) The weight of the demolition ball shall not exceed 50 percent of the crane's rated load, based on the length of the boom and the maximum angle of operation at which the demolition ball will be used, or it shall not exceed 25 percent of the nominal breaking strength of the line by which it is suspended, whichever results in a lesser value.
- (c) The crane boom and load line shall be as short as possible.
- (d) The ball shall be attached to the load line with a swivel-type connection to prevent twisting of the load line, and shall be attached by positive means in such manner that the weight cannot become accidentally disconnected.
- (e) When pulling over walls or portions thereof, all steel members affected shall have been previously cut free.
- (f) All roof cornices or other such ornamental stonework shall be removed prior to pulling walls over.
- (g) During demolition, continuing inspections by a competent person shall be made as the work progresses to detect hazards resulting from weakened or deteriorated floors, or walls, or loosened material. No employee shall be permitted to work where such hazards exist until they are corrected by shoring, bracing, or other effective means.

**§1926.860 Selective demolition by explosives.**

Selective demolition by explosives shall be conducted in accordance with the applicable sections of Subpart U of this part.

**§12-131.1-2 Definitions.** As used in 29 CFR Subpart T and applied to this chapter:

"Subpart N" means chapter 12-136.

"Subpart O" means chapter 12-129.1.

"Subpart U" means chapter 12-125. [Eff 9/21/96] (Auth: HRS §396-4)

(Imp: HRS §396-4)